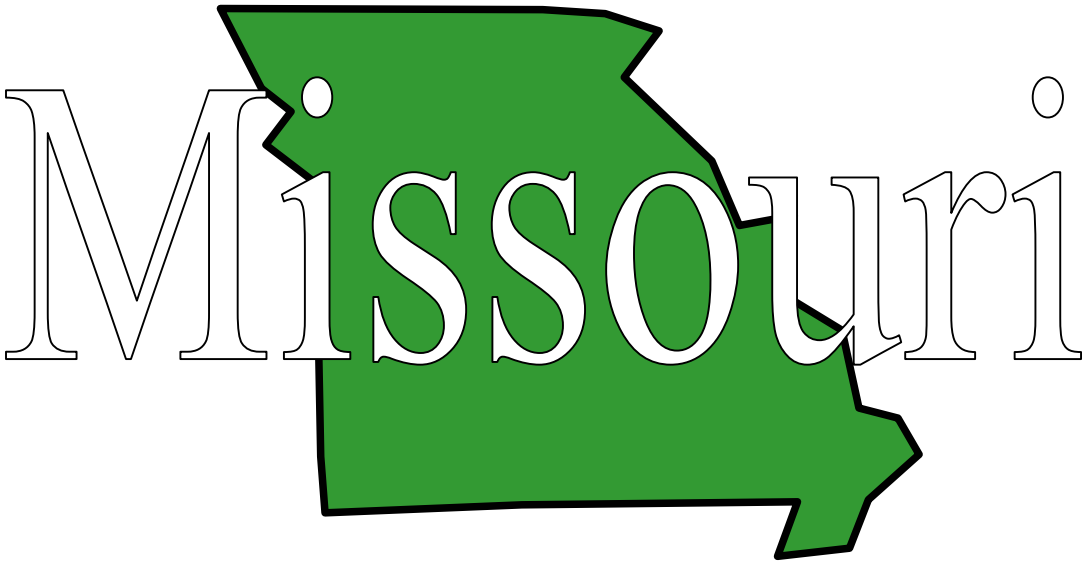

State of Missouri
The Kansas City Maintenance Area
8-Hour Maintenance Plan
for the Control of Ozone

Missouri Air Conservation Commission
Adopted: April 26, 2007

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Kansas Department of Health and the Environment
U.S. Environmental Protection Agency – Region VII
Mid America Regional Council – Air Quality Forum

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EXECUTIVE SUMMARY

The Kansas City Maintenance Area (KCMA) is designated as an attainment area for the 8-hour ozone standard and as a maintenance area under the previous one-hour ozone standard. Based on these designations, the KCMA is required to have a maintenance plan under section 110(a)(1) of the Clean Air Act (CAA) and the provisions of the U.S. Environmental Protection Agency (EPA)'s Phase 1 Implementation Rule for the 8-hour Ozone Standard (40 Code of Federal Regulations (CFR) Section 51.905(a)(3) and (4)). The Missouri Department of Natural Resources' Air Pollution Control Program has prepared this maintenance plan to meet all of the requirements for the 8-hour ozone standard for its portion of the KCMA. The Missouri portion of the KCMA is based on designations determined under the previous one-hour standard, and is made up of Clay, Platte, and Jackson counties.

The maintenance plan includes all of the components required under the CAA and EPA's Phase I Rule. This 8-hour ozone maintenance plan constitutes a revision to the State Implementation Plan and must provide for continued maintenance of the 8-hour ozone standard for a period of 10 years, ending in 2014. The plan must also provide contingency control measures to be implemented if a violation of the 8-hour ozone standard occurs. These control measures must be able to meet the EPA's desired timeline for adoption and implementation of control measures, which is defined as expeditious as practicable, but no longer than 24 months.

Guidance from the EPA for the development of the maintenance plan also recommends that the plan include a number of additional elements. One of these recommendations is an attainment inventory of typical ozone season (summer) day emissions for a base year. The base year for this emissions inventory of volatile organic compounds, nitrogen oxides and carbon monoxide was developed for a typical summer day in 2002. The attainment emissions inventory was then projected forward to determine the emissions levels in the attainment year of 2014.

The EPA's guidance also recommended that two other elements be included in the maintenance plan. One of these elements is agreement from the state of Missouri to continue operating an air quality monitoring network in the KCMA to verify maintenance of the 8-hour ozone standard in the area. The department's Air Pollution Control Program fully intends to continue monitoring the air quality on the Missouri side of the KCMA. As in the past, any modifications made to the monitoring network will be done through close consultation with the EPA regional office. The final element suggested by the EPA's guidance is the inclusion of a

procedure to monitor the progress of the maintenance plan. It is the intention of the department's Air Pollution Control Program to periodically update the emissions inventory throughout the life of the maintenance plan. It is anticipated that these updates will occur approximately every three years until the attainment year of 2014.

Based on the emissions projections developed for this maintenance plan, it is anticipated that the area will remain in attainment for the 8-hour ozone standard throughout the life of the plan. In fact, when the emissions for the base year of 2002 are compared with the projected emissions for 2014, emissions for the KCMA are expected to decrease. However, there are many factors that affect the formation of ozone, not just the projected growth or decrease of emissions for an area. Therefore, the department's Air Pollution Control Program commits to the implementation of contingency measures in the Missouri portion of the KCMA if a violation of the 8-hour ozone standard occurs.

The contingency control measures have been designed as a two phased approach with implementation occurring when the trigger of a specific phase occurs. Phase I will be triggered by a violation of the ozone standard. Phase I would result in specific control measures being enacted. Phase II would be triggered after Phase I control measures had been given sufficient time to impact the air quality in the KCMA. Phase II provides a list of emission control measure options that would go through further review. It is the intention of the department's Air Pollution Control Program that selected measures would be enacted based on their emission reduction benefits, cost effectiveness, and timeframe of implementation.

1.0 BACKGROUND / INTRODUCTION

1.1 NATIONAL AMBIENT AIR QUALITY STANDARD FOR OZONE

Congress first enacted the Clean Air Act (CAA) in 1970. It was last amended in 1990. The CAA requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. There are two categories of NAAQS that are set by the EPA. The primary standards are health-based standards and are designed to establish limits to protect public health. The secondary standards are commonly referred to as "welfare-based standards" and they are meant to set limits to protect public welfare. These limits are intended to protect against decreased visibility, and damage to crops, animals, and buildings. Currently there are six pollutants with established primary level NAAQS. These pollutants are carbon monoxide, lead, total suspended particles, sulfur dioxide, nitrogen oxide, and ozone. These pollutants are referred to as "criteria" pollutants. The EPA establishes a standard for each criteria pollutant. If an area is found to exceed this value, it is classified as a nonattainment area for that specific pollutant. The states and/or tribes responsible for the affected area must then develop and carry out strategies and measures to attain the NAAQS. The goal is for any areas designated as "nonattainment" to be reclassified by the EPA to attainment for the pollutant.

In 1971, the EPA established a standard for photochemical oxidants. In 1979, the EPA changed the photochemical standard to a national ozone standard of 0.12 parts per million (ppm) of ozone in ambient air, based on a one-hour averaging period. According to the standard, a single monitor was allowed to experience an average of one exceedance of the standard per year over a three-year period. Exceedances of the standard are determined on a per monitor basis. The fourth exceedance for a specific monitor in a three-year time period would result in a violation of the one-hour standard. Due to the EPA's rounding conventions, an area had to have a one-hour ozone concentration of 0.125 ppm at a monitor to be in violation of the standard, and to potentially be declared a nonattainment area.

The CAA requires that the EPA carry out a periodic review of NAAQS for the criteria pollutants. This review must include the scientific basis for (1) changing or reaffirming the

NAAQS and (2) implementing the NAAQS. As required by the CAA, the EPA reviewed the one-hour NAAQS for ozone in the 1990's and determined that a new standard was needed. This new standard was finalized in July of 1997. The replacement of the ozone NAAQS was done under subpart 1 of the CAA, Title I, Part D.

The new ozone standard is based on an eight-hour averaging period. This standard defines an area as in attainment of the 8-hour ozone standard when the three-year average of the annual fourth highest daily maximum 8-hour ozone concentration is less than or equal to 0.08 ppm (or 80 parts per billion (ppb)). Due to rounding conventions in the new standard, an 8-hour average ozone concentration above 0.085 ppm is considered an exceedance of standard. When the three-year average value is 0.085 ppm or greater, a violation of the ozone NAAQS has occurred. As with the previous one-hour standard, a violation of the eight-hour standard is determined on a per monitor basis. Monitor readings (and exceedances) at one location do not have any affect on the readings at another.

The EPA was challenged in court on the new 8-hour standard, and the one-hour standard was reinstated. The Supreme Court upheld the constitutionality of 8-hour standard, but ruled that the EPA could not implement the new standard under subpart 1 of the CAA without considering the CAA's subpart 2 requirements. Subpart 2 specifies area classification for nonattainment areas with additional control strategy requirements for each classification. The Supreme Court left it to the EPA to develop a reasonable resolution of the roles of subparts 1 and 2 in implementing a revised ozone standard. The rule was remanded back to the EPA in order to develop a reasonable approach to implement the new standard while considering the roles of subparts 1 and 2 in the implementation.

On March 18, 2002, the EPA published a Notice of Public Meeting in the *Federal Register* regarding the implementation of the 8-hour ozone standard to address subpart 2 of the requirements per the Supreme Court decision. On March 26, 2002 the U.S. Court of Appeals for the District of Columbia unanimously rejected all remaining challenges to the EPA's new ozone and fine particulate standards. On June 2, 2003, the EPA published the Proposed Rule to implement the 8-Hour Ozone National Ambient Air Quality Standard in the *Federal Register*. Phase 1 of the Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard was released on April 30, 2004. This rule provided the guidance to develop the

maintenance plan for areas that were in attainment for the 8-hour standard, but had previously been in nonattainment for the one-hour standard.

On December 22, 2006, the U.S Court of Appeals for the District of Columbia handed down a decision that may impact the 8-hour ozone standard. At this time, the state of Missouri has determined that the best course of action is to follow the timeline established by Phase 1 of the Final Rule. The ultimate outcome of this court case may affect this Maintenance Plan, and require a revision after the EPA submittal deadline for this plan.

1.2 OZONE AND ITS FORMATION

Ozone is a reactive chemical compound. It is made up of three oxygen atoms and is identified by the chemical symbol O_3. Ozone is a gas that occurs both in the Earth's upper atmosphere and at ground level. Depending on where ozone is found, it can be good or bad. When it occurs naturally in the upper atmosphere, ozone acts as a shield from the sun's harmful ultraviolet rays. However, ground-level ozone is a concern during the summer months when the weather conditions are favorable for producing ozone.

Unlike most other pollutants, ozone is not emitted directly into the air by specific sources, but is formed by a photochemical reaction. This reaction occurs between oxides of nitrogen (NOx) and volatile organic compounds (VOCs) in the presence of sunlight and elevated ambient temperatures. There are numerous sources of NOx and VOC pollutants. These sources are divided into four types, including stationary, area, mobile and natural. Stationary sources include larger permitted industries and power plants. Area sources are small, stationary, non-transportation sources that collectively contribute to air pollution. Examples of area sources include gas stations, automotive shops and dry cleaners. Mobile sources are divided into two categories: on-road and off-road. On-road mobile sources include cars, trucks and buses. Off-road sources include trains, ships, boats, airplanes, lawn equipment, and construction equipment. Natural sources for VOCs are released from vegetation, such as trees. Natural NOx sources are very rare, but include lightening and soil. Ozone is most commonly an urban air issue, but high ozone readings can also be found in rural areas. This is due to the fact that emissions of NOx and VOC from motor vehicles and stationary sources can be carried hundred of miles from their origins, and contribute to high ozone concentrations over very large, multi-state regions.

1.3 Negative Effects of Ozone

Ozone is a strong oxidizing agent, with the potential to damage or impair lung airways and cause inflammation. People with respiratory problems are the most vulnerable to its effects, but even healthy people that are active outdoors can be affected when ozone levels are high. Relatively low amounts of ozone can cause chest pain, shortness of breath, and coughing. Ozone can also worsen asthma, bronchitis, and emphysema. Repeated exposure to ozone pollution for several months may cause permanent lung damage. Anyone who spends time outdoors in the summer is at risk, particularly children and active adults.

Ground level ozone can also have negative effects on plants and other vegetation by interfering with their ability to produce and store food. It can also reduce agricultural productivity and forest yields. Ozone also affects manufactured products. It causes or accelerates the deterioration of building materials, surface coatings, rubber, plastic products and textiles.

1.4 Geographical Description of the Kansas City Maintenance Area

The Kansas City Maintenance Area (KCMA) consists of five (5) counties within the larger bi-state Kansas City Metropolitan Statistical Area (MSA). The counties included in the KCMA were determined by violations of the now revoked one-hour ozone standard, and will continue to be monitored for the 8-hour ozone standard. These counties include Jackson, Clay and Platte counties in Missouri, and Johnson and Wyandotte counties in Kansas. The Kansas Department of Health and Environment (KDHE) is developing a similar implementation plan for the Kansas counties in the KCMA. A map of the area can be found in Appendix A.

1.5 Kansas City Ozone History

1.5.1 One Hour Ozone Designation

1.5.1.1. 1979 Ozone Implementation Plan History

In the 1970's, the Kansas City Area was determined to be in violation of the one-hour ozone NAAQS. The CAA requires any area that fails to attain the standard for a criteria pollutant (such as ozone) to develop and implement a State Implementation Plan (SIP) with sufficient control requirements to expeditiously return the area to attainment status. In compliance with federal law, the state of Missouri developed and implemented its first Kansas City Ozone Implementation Plan in 1979.

The 1979 plan projected attainment of the ozone NAAQS for the KCMA by December 31, 1982. The EPA fully approved the 1979 Kansas City Ozone Implementation Plan, and the area appeared to meet the standard at that time. However, violations in the 1983 and 1984 ozone seasons required the state to review the 1979 ozone plan.

1.5.1.2. 1987 Ozone Implementation Plan

The revisions to the 1979 version of the Plan were included as part of the 1987 Ozone Implementation Plan. The 1987 SIP submittal also incorporated all of the requirements under the EPA's post-1982 nonattainment policy. The 1987 Ozone Implementation Plan projected attainment of the ozone standard by December 31, 1987. On November 2, 1989, the EPA fully approved the 1987 Ozone Implementation Plan, making the control measures contained in the plan federally enforceable.

Ozone monitoring data for the ozone seasons of 1985 through 1987 again indicated that the one-hour ozone standard had been achieved in the KCMA. Thus, work was initiated on maintenance provisions to the Missouri SIP, as well as an attainment redesignation request to the EPA for the area. However, violations in the monitoring period from 1986 through 1988 caused the KCMA to again be in violation of the ozone standard.

Ozone monitoring data for the monitoring period from 1987 through 1991 demonstrated that the area had again attained the one-hour standard. In accordance with the Clean Air Act Amendments of 1990 (CAAA), the 1991 Kansas City Maintenance Plan was developed to recognize that the area had achieved the one-hour ozone standard. The EPA published final approval of this maintenance plan on June 23, 1992. This final approval allowed the 1991 plan

to become effective on the same day. The EPA's approval officially re-designated the KCMA to attainment for the one hour standard.

1.5.1.3. 1997 Maintenance Plan History

In the summer of 1995, the KCMA experienced a period of severe hot weather. During this time, the KCMA recorded its fourth exceedance for the monitoring period of 1993-1995, which resulted in another violation of the one-hour standard. This violation mandated that the contingency control measures listed in the 1991 plan be adopted. These control measures included:

- Emissions offsets of 1:1 for all major sources
- Stage II Vapor Recovery, or Enhanced Inspection and Maintenance (I/M)
- Transportation Control Measures (TCM) achieving a 0.5% reduction in area VOC emissions
- A comprehensive emissions inventory

The states of Missouri and Kansas, along with the Mid-America Regional Council (MARC), expressed to the EPA a need to amend the control measures listed in the contingency section of the 1991 plan. The EPA agreed that the contingency measures could be changed as long as the revised plan achieved the same level of control as intended by the original measures.

The states asked the MARC Air Quality Forum (AQF) to aid in the review of the control measures available to the KCMA. The AQF convened the Ozone Subcommittee to conduct a technical analysis of a number of control measures. The Ozone Subcommittee evaluated the following measures: Reformulated Gasoline (RFG), Low Reid Vapor Pressure (RVP) Gasoline, Stage II Vapor Recovery, and 14 different I/M Programs. The Ozone Subcommittee also evaluated transportation control measures, including:

- Increased bus service during the ozone season
- Free transit during the ozone season
- Free transit on red skycast days
- Commuter rail along the Interstate 35 corridor
- Light rail transit
- Clean fuel fleets
- Lanes for high occupancy vehicles

- Enhanced traffic signalization on arterial routes
- Nontraditional work scheduling and commuting
- Telecommuting
- Parking surcharges
- Taxes on vehicle miles traveled and/or gasoline

The AQF reviewed the Ozone Subcommittee report and recommended the following control measures:

- Expanded public education
- Low RVP gasoline
- Motor vehicle I/M
- Seasonal no-fare transit
- Clean fuel fleets

The AQF also recommended enhanced traffic signalization, expanded mass transit, expansion of the Heartland Sky Program, improved land use planning, additional air quality data collection, expanded public education, and a stationary source study as supplementary measures.

The AQF recommended that the states implement a low RVP fuel program requiring 7.2 RVP gasoline in the KCMA. The Missouri Department of Natural Resources developed a regulation that limited the RVP of gasoline sold in the KCMA between June 1 and September 15 to 7.2 pounds per square inch (psi). An emergency rulemaking was published on January 2, 1997, which required all gasoline sold in the KCMA during the 1997 peak ozone season to be 7.2 psi. The Missouri Air Conservation Commission (MACC) held a public hearing on May 29, 1997, on the permanent RVP rule for the KCMA. The permanent rule was presented for adoption at the June 26, 1997 MACC meeting. The Commission adopted the rule as presented. The final rule was published in the September 3, 1997 *Missouri Register*. The Low RVP rule, 10 CSR 10-2.330 Control of Gasoline Reid Vapor Pressure, became effective on October 30, 1997.

In addition to these rules, the violation of the ozone standard required a revised maintenance plan to be submitted to the EPA. In addition to the low RVP gasoline rule, other measures such as: additional VOC emission reduction rules for stationary sources, increased ambient air monitoring, reduced transit fare on yellow and red skycast days, Clean Cities

programs, enhanced traffic signalization, and improved land use planning were committed to in the revised plan. The maintenance plan also included the AQF's long term recommendation of an I/M program. This plan was presented for public hearing at the April 24, 1997 MACC meeting.

The plan was presented to the MACC for adoption on June 26, 1997 meeting. At that time, the Commission recommended that the department's Air Pollution Control Program revise the plan to replace the proposed I/M program with Stage II Vapor Recovery. The decision to replace the I/M program with Stage II Vapor recovery was based partially on the difficulty in implementing an I/M program in consideration of political feasibility and the time period that would be required to develop such a program. At the July 24, 1997 MACC meeting, MARC asked the Commission to allow the department to take the control plan back to the AQF for further review. The Commission granted this request, and gave the department until December of 1997 to present the revised plan at a public hearing.

One September 3, 1997, the AQF met to review the recommendations of the Commission. The AQF also addressed a second violation of the ozone standard that occurred on August 28, 1997. During the meeting, control strategies were discussed including Stage II Vapor Recovery and RFG gasoline. The AQF convened on October 7, 1997 to recommend the control strategies for the KCMA. The forum recommended the implementation of an RFG program as well as the previously approved measures. The AQF recommended that Stage II Vapor Recovery be included as a contingency measure in the event that implementation of an RFG program was unsuccessful.

The department's Air Pollution Control Program amended the revised maintenance plan to reflect the latest forum recommendations. It was decided that the Commission would determine the implementation year for the RFG program. The maintenance plan was drafted with the request for comments on the implementation date included. Also included in the plan was the commitment to implement Stage II Vapor Recovery if an RFG program could not be implemented.

On February 3, 1998, the Commission adopted the revised Kansas City Ozone Maintenance Plan. The recommended implementation date for an RFG program was set as April 15, 2000. The department's Air Pollution Control Program committed to making a formal request to the Governor of Missouri to include the Missouri counties of the KCMA into the

federal RFG program. This revised maintenance plan was sent to the EPA on March 25, 1988. EPA approved the plan on January 29, 1999.

1.5.1.4. 2002 Maintenance Plan History

As the maintenance plan required, the department's Air Pollution Control Program updated the MACC on the status of the Federal RFG amendment at the August 1998 meeting. The department's Air Pollution Control Program recommended that the Commission delay any action until the September 24, 1998 MACC meeting, pending the EPA's decision on permitting the KCMA to join the RFG program.

At the September 24, 1998 MACC meeting, the department's Air Pollution Control Program requested direction from the Commission on moving forward with the maintenance plan as adopted. The Commission was informed that the EPA was passing the needed regulations to allow former nonattainment areas such as those found in Missouri and Kansas to request RFG for the KCMA. On September 29, 1998, the EPA published the Federal opt-in rule amendment to allow former nonattainment areas such as the KCMA to opt-in to the Federal RFG program. The Commission agreed that the department's Air Pollution Control Program should move ahead with the maintenance plan as adopted.

On April 6, 1999, the EPA disapproved the Long Range Transportation Plan (LRTP) for the KCMA. This disapproval was based on the lack of a formal commitment from the states to reduce the emissions in the KCMA. The Federal Highway Administration (FHA) stopped approving new roadway projects on May 7, 1999. The FHA set the initial date that highway funding would be withheld as July 28, 1999.

On May 27, 1999, the EPA published its conditional approval of the submitted maintenance plan. The approval was based on one of the following three conditions being met: that the Governor of Missouri request to opt-in to the Federal RFG program; the state implement a regulation for a state fuel; or Stage II Vapor Recovery be implemented. One of these options had to be completely implemented by April 15, 2000.

On June 2 and 3, 1999, the department's Air Pollution Control Program, in conjunction with KDHE, held a Kansas City Fuel Summit to discuss the implementation of the ozone maintenance plan options. Although the summit did not result in a clear recommendation to

pursue the Federal RFG program, it did illustrate the problems and difficulties in not pursuing the Federal RFG option.

On July 27 and 28, 1999 Governor Graves of Kansas and Governor Carnahan of Missouri, respectively, signed letters requesting that the KCMA be included in the Federal RFG program. By submitting these opt-in letters to the EPA, the LRTP was brought back into conformity. This made the transportation plan approvable and allowed for the continued distribution of highway funding for the KCMA. The submission of the opt-in letters by the two governors also met the conditional approvability requirement for the maintenance plan laid out by the EPA in the May 27, 1999 Federal Register.

Problems arose on November 9, 1999 when the U.S. Court of Appeals for the District of Columbia Circuit issued an order to stay the effectiveness of the EPA amendments to 40 Code of Federal Regulations (CFR) § 80.70(k). This stay prevented former nonattainment areas such as the KCMA from being able to opt-in to the Federal RFG program.

On January 4, 2000, the same court ruled that EPA exceeded its authority by modifying 40 CFR § 80.70(k) to allow former nonattainment areas to opt-in to the Federal RFG program. As a result of this ruling, the EPA sent a letter to the Governor of Missouri on April 11, 2000. This letter informed the State of Missouri that it must select an alternative control strategy to the RFG program, and submit a written commitment to the EPA within 90 days.

As a result of the Court's ruling barring the use of RFG in the spring of 2000, the department's Air Pollution Control Program held three meetings with the petroleum interests serving the KCMA. The topic of discussion was the availability of an RFG-like fuel for the area. The petroleum industry committed to supplying the KCMA with a 7.0 psi RVP gasoline. This gasoline alone would not meet the emissions reductions needed for the maintenance plan. Therefore, both Kansas and Missouri needed to investigate stationary sources for additional emissions reductions.

In June of 2000, the AQF voted to reaffirm their recommendation that Stage II Vapor Recovery be implemented if a state RFG-like fuel was not available to the KCMA. Also in June of 2000, the MARC Board of Directors reaffirmed their commitment to Stage II Vapor Recovery.

On July 7, 2000, Kansas sent a letter to EPA Region VII committing to 7.0 RVP gasoline and a cold solvent cleaning rule. Missouri followed up Kansas's commitments with their own to

implement 7.0 RVP gasoline and a cold solvent cleaning rule for their portion of the KCMA. The department's Air Pollution Control Program also committed to amending the Stage I Vapor Recovery Program in the KCMA to include enhanced reporting and record keeping, increased inspection frequency, and installation of pressure vacuum relief valves.

To comply with the Governor's commitment letter, the department's Air Pollution Control Program amended three rules for the 2002 plan. The amendment to rule 10 CSR 10-2.330 Control of Gasoline Reid Vapor Pressure changed the summer gasoline RVP requirement in the KCMA from 7.2 to 7.0 psi. An amendment to rule 10 CSR 10-2.260 Control of Petroleum Liquid Storage, Loading, and Transfer made the changes to the Stage I Vapor Recovery Program that the Governor's letter specified. Finally, the amendment to 10 CSR 10-2.210 Control of Emissions from Solvent Metal Cleaning required low vapor solvents to be used in cold cleaning processes. All of these amendments were approved by the Commission and became effective in 2001.

Other control measures were also pursued to meet the required emissions reductions. The department's Air Pollution Control Program proposed two new rules that had been identified by the 1992 plan. One new rule was 10 CSR 10-2.205 Control of Emissions from Aerospace Manufacturing and Rework Facilities. Rule 10 CSR 10-2.215 Control of Emissions from Solvent Cleanup Operations was also proposed. These two rules became effective in 2001.

In addition to rule development, Kansas, Missouri, and MARC worked together to develop the 1999 emissions inventory for the KCMA. In January 2002, the EPA released MOBILE 6 for use in calculating mobile source emissions. All parties involved agreed to use the new MOBILE 6 program to calculate mobile source emissions. On June 11, 2002, the MARC Board of Directors approved the mobile budgets. On July 25, 2002, the MACC approved the 2002 Maintenance Plan for the Control of Ozone with the mobile budgets calculated by MOBILE 6.

While presenting the 2002 plan to the Commission for approval, the department's Air Pollution Control Program informed the MACC that the MARC was compiling a new set of population and employment forecasts. When they received all of the updated information, MARC would determine if a recalculation of the mobile budget numbers would be required. In September 2002, MARC approved the new employment and population forecasts. The interagency consulting group and MARC jointly determined that a new area source inventory

and mobile emissions budget was necessary. MARC approved the new mobile source budget on October 29, 2002. The Commission approved the updated budgets on December 5, 2002. The 2002 Maintenance Plan was subsequently submitted to the EPA. It was found complete in December of 2002, and was proposed for approval in the *Federal Register* on September 16, 2003. It was given final approval by the EPA on in the January 13, 2004 *Federal Register*.

1.5.2 8-Hour Ozone Designation

During the week of December 9, 2002, the governor of Missouri received a letter from the EPA requesting submission of updated, revised, or new designation recommendations and documentation by April 15, 2003. This request was to aid the EPA in preparation of the designations for the new 8-hour ozone standard. The EPA later extended the deadline for this request to July 15, 2003. The department's Air Pollution Control Program recommended that the counties of Clay, Platte and Jackson, along with the northern portion of Cass County be designated as nonattainment for the 8-hour ozone standard in Kansas City.

At the same time the states of Kansas and Missouri were preparing the 8-hour designation recommendations for the EPA, the MARC AQF determined that a proactive approach to ozone reduction would be the most beneficial for the Kansas City area. Therefore, MARC embarked on a process that ultimately resulted in a Clean Air Action Plan (CAAP) for Kansas City. This plan was developed using a more recent air quality analysis than the previous Maintenance Plan, and used the most recent emissions inventory numbers available. This voluntary plan of suggested emissions reductions is designed for use as a guide for emissions reductions prior to regulation deadlines. It also provides the area with an outline of the options that can assist in reducing ozone levels. The CAAP includes an estimate of the amount of reductions for each of the suggested emissions reduction possibilities. The MARC submitted the CAAP to the EPA on May 10, 2005. In April of 2006, the EPA recognized the Kansas City CAAP with a 2005 Clean Air Excellence Award.

On June 2, 2003, the EPA published the Proposed Rule to implement the 8-Hour Ozone National Ambient Air Quality Standard in the *Federal Register*. In April of 2004, based on the most recent ozone data available, the EPA designated the KCMA as "unclassifiable" for the 8-hour standard, and indicated that a decision on Kansas City's attainment status would be made following the 2004 ozone season.

Due in part to a mild, wet summer, no exceedances of the 8-hour ozone standard were recorded at any of the ozone monitors in Kansas City during 2004. Based on the monitoring data from the three-year period of 2002 through 2004, the KCMA was designated as attainment for the 8-hour ozone standard. In December of 2004, the department's Air Pollution Control Program sent a letter to the EPA certifying the monitoring data for the latest three-year period. This letter also requested that the KCMA be designated as an attainment area for the 8-hour ozone standard.

In the May 3, 2005 *Federal Register*, the EPA issued the Final Rule for the Air Quality Redesignation for the 8-Hour Ozone National Ambient Air Quality Standard for Some Counties in the States of Kansas and Missouri. This redesignation formally recognized the KCMA as being in attainment for the 8-hour ozone standard, effective June 2, 2005.

Although, the KCMA was designated attainment for the 8-hour standard, the counties of Clay, Jackson and Platte continued to be a maintenance area for the one-hour standard. Once the 8-hour designation was finalized, Missouri and Kansas looked for guidance from the Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard – Phase I that was published in the *Federal Register* on April 30, 2004. This rule requires states to submit maintenance plans for the 8-hour ozone standard under Section 110 (a)(1) of the Clean Air Act for areas initially designated as attainment for the 8-hour ozone standard, but that had been in violation of the one-hour standard in the past. This maintenance plan has a deadline of submission to the EPA of June 15, 2007. The KCMA falls under these requirements.

In addition to requiring former nonattainment areas to submit maintenance plans, Phase I of the 8-Hour Ozone Rule revoked the one-hour ozone NAAQS on June 15, 2005. Because the 2002 plan for Kansas City only referenced the one-hour standard, it was determined that as a transitional measure, the 2002 plan should be revised to include references to the 8-hour standard. This transitional plan would ensure that an enforceable SIP was in place during the development of the new 8-hour maintenance plan. The transitional plan included the contingency measures that had been developed under the one-hour plan, and could be enforced if a violation of the new 8-hour standard occurred. The EPA also stated in 69 FR 23985 that "The maintenance plan requirements [for the one-hour ozone standard] will remain enforceable as part of the approved SIP until such time as the EPA approves a SIP revision removing such obligations." Thus, although the one-hour standard was revoked, the contingency measures and

triggers associated with the one-hour standard remain in effect until a new SIP replaces these contingency measures and associated triggers is approved.

The 2005 Maintenance Plan for the Control of Ozone was adopted by the MACC on July 21, 2005 and submitted to the EPA on September 6, 2005. The EPA issued its final approval of this maintenance plan in the June 26, 2006 *Federal Register*.

1.6 CURRENT OZONE MAINTENANCE AND CONTINGENCY PLANNING

After the transitional plan was completed, work began on the new 8-Hour Maintenance Plan for the KCMA. Discussions were held between the states of Kansas and Missouri to establish a tentative outline for the organization of the plan, as well as the emissions inventory and potential modeling of a new episode for the area. An Ozone Technical Workgroup was created by the AQF to provide the opportunity for concerned stakeholders from the Kansas City area to take part in the creation of the Maintenance Plan that would act as the air quality guidance for the KCMA until 2014.

Due to the KCMA's current status as an attainment area for the 8-hour standard, one of the main focuses of the plan was the contingency measures and associated triggers. A number of workgroups and meetings were held with sources that would be effected by contingency measures. These meetings provided companies the opportunity to discuss their reactions to the proposed contingency control measures. It also allowed those regulating the industries the opportunity to communicate their goals and plans for various contingency control measures. The final outcome of all of the meetings and workgroups was a contingency control measures list that included a variety of control measures that would impact sources of both VOCs and NOx.

This document and its attachments are the result of this collaborative process, and is the 8-Hour Maintenance Plan for the Control of Ozone for the Kansas City Maintenance Area. It was prepared to fulfill the EPA's requirements. This plan is intended to replace the transitional plan that was developed in 2005.

2.0 REQUIREMENTS

2.1 CLEAN AIR ACT REQUIREMENTS

The KCMA is in a somewhat unique position due to its maintenance status under the previous one-hour ozone standard and as an attainment area under the current 8-hour standard. The EPA recognized that a number of areas would be in the same position when they published Phase I of the 8-Hour Ozone NAAQS. Therefore, the rulemaking established Sections 51.905 (c) and (d) that set forth anti-backsliding requirements for areas such as the KCMA. These provisions require these areas to submit a 10-year maintenance plan under Section 110 (a)(1) of the CAA if they were a nonattainment area, or an attainment/unclassifiable area with a Section 175A maintenance plan under the one-hour ozone standard.

The 8-Hour Ozone Maintenance Plan under Section 110 (a)(1) of the CAA, constitutes a SIP revision. The plan must provide for the continued maintenance of the 8-hour ozone NAAQS for 10 years from the effective date of the KCMA's designation as unclassifiable/attainment for the 8-hour ozone standard. It must also include contingency control measures that would be implemented as a result of a violation of the 8-hour ozone standard. Guidance provided by the EPA to aide states in the development of this maintenance plan recommend that the plan include the following elements:

1) Attainment Inventory – An inventory based on a typical summer day of emissions of VOCs and NOx. As suggested by the EPA, the inventory developed for the 2002 Consolidated Emissions Reporting Rule was used as the attainment emission inventory base year for the maintenance plan.
2) Maintenance Demonstration – It must show how the area will remain in compliance with the 8-hour ozone standard for the 10 year period following the effective date of designation as unclassifiable/attainment. Therefore, the plan must project attainment through 2014.
3) Ambient Air Quality Monitoring – Missouri and Kansas agree to operate air quality monitors in accordance with 40 CFR 58 to verify maintenance of the 8-hour standard in the area. Any proposed network modifications must be accompanied by technical and statistical analysis sufficient to document the need to remove, move or add monitors.

4) Contingency Plan – Both states must develop a contingency plan that will, at minimum, ensure that any violation of the 8-hour ozone standard is promptly corrected. The plan must also assure that the contingency measures are adopted expeditiously once they are triggered. The EPA expects the plan to clearly identify the measures to be adopted, including a schedule and procedure for adoption and implementation, and offer a specific time limit for action by the States. A maximum time limit of 24 months for adoption and implementation of contingency measures is anticipated by the EPA. In addition, both Kansas and Missouri must identify specific indicators, commonly referred to as "triggers", to be used to determine when contingency measures need to be adopted and implemented.
5) Verification of Continued Attainment – This verification is an indication of how the two states will track the progress of the maintenance plan. Verification is necessary based on the fact that the emissions projections made for the maintenance demonstration are based on assumptions of point, area, and mobile source growth. By verifying the assumptions on a periodic basis, States are assuring that the area is in attainment during the entire 10-year maintenance period, not just showing that the area will again be in attainment at the end of the 10-year time period.

In addition to the above requirements, the KCMA must keep all of the controls that are in place for maintaining the one-hour standard. According to Phase I of the 8-hour Rule, an area must first submit a Section 110 (a)(1) maintenance plan before a revision to make any changes to the one-hour controls or contingency measures is considered. At that time, any modifying or removing of one-hour controls must be done under Section 110 (l) of the CAA.

2.2 ADMINISTRATIVE REQUIREMENTS

2.2.1 Legal Authority

The Missouri Air Conservation Commission is granted the legal authority to develop and implement regulations regarding air pollution under section 643.050 of the Revised Statues of Missouri.

2.2.2 Public Hearing Notice and Certification

The department's Air Pollution Control Program is required to announce a public hearing, at least 30 days prior to holding such a hearing. Announcements were submitted to newspapers at least 30 days prior to the public hearing. The public hearing for this maintenance plan occurred on March 29, 2007. Attached in Appendix B is the public hearing notice, along with certification of publication of the public notice for the maintenance plan.

2.2.3 Comments, Responses, and Explanations of Change

Attached in Appendix C are the department's Air Pollution Control Program responses to comments received during the open public comment period for this maintenance plan. The comment period was open until April 5, 2007, seven days after the Public Hearing that was held on March 29, 2007. The department's Air Pollution Control Program is required to respond to all comments received by either amending the plan or explaining the reasoning for not making an amendment.

2.2.4 MACC Adoption Certification

Attached in Appendix D is the MACC adoption certification to demonstrate the approval of the Maintenance Plan by the Commission.

2.2.5 Commitment to Revise Plan

Under Phase I of the 8-Hour Ozone NAAQS, a maintenance plan is only required for the first 10 years following designation under the 8-hour standard. It does not require a second 10-year maintenance plan as is required for areas subject to a Section 175 A maintenance plan. However, contingency plans approved as part of the Section 110 (a)(1) maintenance plan remain in effect, and if the area violates the 8-hour standard after the initial 10-year period, contingency measures could still be triggered. The department's Air Pollution Control Program recognizes the importance of an up-to-date, current maintenance plan, and commits to updating it as necessary.

3.0 CONTROL MEASURES

3.1 CURRENT CONTROL MEASURES

The 2007 Kansas City 8-Hour Maintenance Plan for the Control of Ozone shows, without the addition of any new control measures, that ozone precursor emissions will be reduced between the base year of 2002 and the projected attainment year of 2014. In fact, the projected inventory for 2014 shows a decrease in both NOx and VOC emissions for the KCMA. These reductions are the result of a number of rulemakings whose implementation has occurred between the 2002 base year inventory and the 2014 attainment year inventory.

3.1.1 Federal Control Measures

There are a number of emissions control measures that were developed on a federal level and implemented after 2002, and will become effective by the 2014 attainment date. The net result of these emissions control rules were included in the 2014 projection by adjusting the default growth values in the inventory. These rulemakings include:

Tier 2 Vehicle and Gasoline Sulfur Program

2007 Highway Rule – Heavy Duty Diesel Engines and Ultra Low Sulfur Diesel (ULSD)

ULSD requirement increase to include all refiners and the offroad diesel supply

Onboard Refueling Vapor Recovery (ORVR) – Light truck models

Clean Air Interstate Rule – NOx reductions for Electric Generating Units

The majority of these federal control measures affect onroad mobile sources. One measure, the Clean Air Interstate Rule (CAIR) affects large stationary sources. CAIR decreases emissions at power plants, referred to as electric generating units (EGUs). EGUs with a generator nameplate capacity greater than 25 megawatts fall under CAIR's regulations. CAIR is an EPA rulemaking that permanently caps sulfur dioxide and NOx emissions in the eastern 28 states, including Missouri. According to the EPA Fact Sheet for CAIR, once CAIR is fully implemented, the EPA estimates that CAIR will reduce NOx emissions by over 60 percent from 2003 levels. Under CAIR, Missouri will require all EGUs to participate in an EPA administered cap and trade system that caps emissions in two stages. Stage I controls for annual NOx emissions reductions must be in place by January 1, 2009, and Stage I controls for ozone season NOx emissions reductions must be in place by May 1, 2009. Stage II emission reduction controls for annual NOx and ozone season NOx emission reductions must be in place by January and May of 2015, respectively. EPA's Fact Sheet for CAIR estimates that the first stage of CAIR will result in over 50% reductions in NOx emissions from affected EGUs.

3.1.2 State Control Measures

The state of Missouri has previously adopted a number of control measures to reduce the VOC emissions in the KCMA. These measures were enacted in order to achieve and maintain the previous one-hour standard. These measures include a series of VOC emission control rules. The VOC emission reduction rules are designed to aid in reducing VOCs from stationary emission sources. Another VOC reducing rule that is specific to the KCMA focusing on mobile sources is the 7.0 psi low RVP fuel rule. Most of these rules have been in effect long enough that their reductions are reflected in the 2002 base inventory. Those rules that included deadlines for emissions reductions that were required after 2002 were taken into account by adjusting the projected 2014 emissions inventory. A list of the current state regulations that apply only to the KCMA can be found in Appendix E.

3.2 VOLUNTARY CONTROL MEASURES

3.2.1 Clean Air Action Plan

The department's Air Pollution Control Program, along with MARC and KDHE has continued to foster the implementation of voluntary measures to aid in reducing the emissions of VOCs and NOx in the KCMA. As an example, a Clean Air Action Plan (CAAP) was created for the region. The CAAP can be found in Appendix F. The CAAP represents a comprehensive, community based voluntary strategy for reducing ground level ozone pollution in the KCMA. The metropolitan Kansas City area has a long history of working to improve its air quality through both regulatory and voluntary measures, but the CAAP represented the first time that the region had worked to develop a systematic and comprehensive clean air strategy outside of a regulatory framework. The CAAP's goal is to reduce ozone-forming emissions earlier than required under regulatory timelines in order to increase the likelihood that the region will stay in compliance with the 8-hour ozone standard.

At the end of 2003, when a violation of the 8-hour standard appeared imminent, the MARC AQF created a 12-member Air Quality Working Group (AQWG) to oversee the development of the CAAP for the Kansas City region. The group consisted of four elected officials, four representatives of business and regulated industry, and four community group

representatives. A technical advisory group consisting of staff from KDHE, the department's Air Pollution Control Program and local agency staff supported the AQWG.

3.2.1.1 Modeling

As part of the CAAP, the AQWG set an aggressive meeting schedule and in February of 2004 embarked on a mission to better understand the region's ozone problem. With assistance from the department's Air Pollution Control Program and KDHE, MARC contracted with Sonoma Technologies, Inc. to provide additional technical support in evaluating control strategy options and conducting a photochemical modeling analysis of 8-hour ozone values in the Kansas City region. The modeling was also used to evaluate measures that could be used to reduce emissions.

A specific historical period with high ozone concentrations was selected as a representative episode, and an emissions inventory for that time period was developed. Once the model was run for the specific historical period, an evaluation of the simulations was made in accordance with the EPA guidelines. Comparisons of model-predicted ozone levels were made with ambient air quality data to determine how closely ozone concentrations predicted by the model corresponded to observed concentrations. The model predicted ozone concentrations quite well at all sites and for most hours of the day with a few exceptions. The model did tend to under predict the ozone levels at night in the urban core. The deviations did not reach a level of concern and the overall model performance statistics met the EPA's criteria for acceptance.

Once it was established that the air quality modeling system was adequately reproducing ozone levels for the historic episode, the model was rerun with future projected emissions for 2010. This run did not include any local controls. The model predicted the ozone design value for 2010 would fall just below the 8-hour standard. Because the predicted ozone design value was close to the 8-hour standard, it was determined that using the model to assess various control strategies to reduce emissions that lead to ozone formation in the KCMA would be a valuable exercise.

The photochemical model was used to assess various groups of control strategies. Of the strategies modeled, reducing NOx emissions from EGUs was shown to have the greatest effect on lowering ozone concentrations in the KCMA. Voluntary measures were also shown to help reduce the potential for ozone formation.

3.2.1.2 Approval and Submission of CAAP

The AQF and MARC Board of Directors approved the CAAP in March of 2005. The CAAP was submitted to the EPA Region 7 on May 15, 2005. In April of 2006, the EPA recognized the CAAP with a 2005 Clean Air Excellence Award. This award is given to recognize and honor outstanding, innovative efforts that help to make progress toward achieving cleaner air.

3.2.1.3 CAAP Measures Implemented

In accordance with the CAAP, MARC has hosted a number of workshops to inform small businesses on innovative methods to decrease their VOC and NOx emissions. These workshops have focused on area emissions sources such as commercial lawn and garden maintenance, printing, and autobody painting. Public education and outreach has continued to inform both companies and individuals on what they can do to reduce their emissions on high ozone days. MARC has begun to focus on the more long term planning aspects of the CAAP. Transportation has been chosen as the main focus. MARC believes that it offers the most beneficial opportunities for long term air pollution reduction.

4.0 MONITORING NETWORK

4.1 OZONE MONITORING NETWORK

The KCMA ozone monitoring network consists of eight monitors. Assuming winds are predominantly from the south, two monitors are placed downwind, north and east of Kansas City, in Liberty, Missouri and in Watkins Mill Park. They are situated to record the peak afternoon readings. Another monitor is placed in a populated area, at Rocky Creek, Missouri (moved from Worlds of Fun in 2002). A fourth monitor is placed upwind in the prevailing summer wind patterns, south of Kansas City at Richards Gebaur Airport. The purpose of the monitor at Richards Gebaur is to monitor ozone transport from outside the metropolitan area. One monitor is located in the downtown area, on 10th Street in Kansas City, Kansas, Wyandotte County. For the 2003 ozone season, two additional monitors were added. These two monitors provide additional monitoring on the Kansas side, in the outlying suburban areas at the U.S.

Penitentiary in Leavenworth, Kansas, and at Heritage Park in Olathe, Kansas. An eighth monitor was added for the 2004 ozone season. This monitor is located in the southwest corner of Clinton County, in Trimble, Missouri. This monitor measures ozone levels just north and east of the maintenance area. A map in Appendix G1 shows the locations of the monitors in and around the KCMA.

Various organizations are responsible for the maintenance of the monitors in the monitoring network. The department's Air Pollution Control Program maintains the operation of the Liberty, Rocky Creek, Trimble and Watkins Mill Park locations. The monitor in Kansas City, Kansas is operated by the Wyandotte County Department of Air Quality. Two monitors are operated by KDHE's Bureau of Air and Radiation, at the U.S. Penitentiary in Leavenworth, Kansas and at Heritage Park in Olathe, Kansas. For the 2006 ozone season, one monitor was removed from the monitoring network. This monitor was located at the Kansas City International Airport (KCI). The KCI monitor had been in use since 1969. The site was discontinued based on the EPA's recommendations from the Kansas City metropolitan area's monitoring network review. This review also resulted in the movement of a monitoring site from World's of Fun to Rocky Creek.

4.2 AMBIENT AIR MONITORING

As previously mentioned, exceedances of the standard are determined on a per monitor basis. An exceedance of the standard occurs any time that an 8-hour average value is greater than 0.084 ppm. A monitor can exceed the 8-hour standard and not violate the standard. A violation of the standard at a specific monitor is determined by taking the fourth-highest, eight-hour average reading at a monitor for each of three consecutive years and averaging them together. The eight-hour ozone standard is 0.08 ppm and, due to rounding, a monitor must have a fourth highest eight-hour, three-year average reading of 0.085 ppm or higher for it to be considered a violation of the standard.

Appendix G2 lists the values for the four highest exceedances of the eight-hour standard annually at each monitor and the total number of exceedances the monitor recorded each year. In order to show a more historical perspective of the 8-hour standard, the readings include 8-hour

monitoring data beginning with the 1997 ozone season when the 8-hour ozone rule became effective, or the year the monitor was installed.

Since 2002, the KCMA has experienced 81 exceedances of the eight-hour ozone standard. Twenty-five exceedances of the eight-hour standard were recorded in 2002, followed by 27 in 2003. Due in part to a mild, wet summer, the 2004 ozone season recorded no exceedances of the eight-hour standard. In the 2005 ozone season, 29 exceedances were recorded. The values of the exceedances for the eight-hour standard have ranged from 0.115 ppm to 0.085 ppm. For comparative purposes, the total number of exceedances recorded each year since 1997 at all monitoring locations appears in Appendix G3.

4.3 Monitoring Based Attainment Demonstration - Design Values for the KCMA

Design values are used as indicators of a region's air quality. A design value is the indicator of the known ozone value for a monitor, and provides a value for comparison with actual measurements during the ozone season. A specific monitor's design value under the 8-hour standard is determined by taking the fourth highest eight-hour average reading at a monitor for each of three consecutive years and averaging them together. The higher a design value for an area, the poorer the air quality. Along the same lines, if an area shows an increasing design value over a number of years, monitoring data is indicating that the air quality is worsening.

The design value for the KCMA is determined by comparing all of the design values for the monitors in the maintenance area. The area's design value is determined by the highest individual monitor's design value for each three-year averaging period. The area's status of attainment or nonattainment is determined by this design value. For the eight-hour ozone standard, the design value for the three-year time periods from 2002 through 2005 do not exceed 0.085 ppm, and thus achieve attainment for the KCMA. Appendix H includes the design values for the eight-hour standard for each of the three-year design value time periods between 1997 and 2005.

4.4 Missing Data Under the Eight-Hour Ozone Standard

Eight-hour ozone attainment is determined by a three-year average of the annual fourth highest daily maximum. Missing days are of importance only in determining whether sufficient data was sampled to determine compliance. A monitoring day must include 18 valid eight-hour averages for a daily maximum to be determined. To calculate a design value, an average of 90% of the possible daily maximums over a three year period must be complete, with no one year having less than 75%. The final result is that no more than 53 missed days in one year, or 64 missed days total for the three-year period are allowed. If these criteria are not met, then compliance with the 8-hour ozone standard cannot be established. To date, acceptable monitoring has been maintained in the Missouri portion of the KCMA for the 8-hour ozone standard.

4.5 Quality Assurance Program

The department's Air Pollution Control Program and KDHE quality assure all data that appears in the tables found in Appendices G2 and G3 in accordance with 40 CFR 58.10 and both departments' Quality Assurance Plans and Standard Operating Procedures. These two documents describe the proper procedures for the operation of the ambient air monitoring networks as well as how the data must be validated. The department's Air Pollution Control Program and KDHE are required to record the data into the EPA's Air Quality System (AQS) database, which is made available to the public.

4.6 Continued Ambient Air Monitoring

The department's Air Pollution Control Program commits to continue monitoring ozone levels according to an EPA approved monitoring plan. This monitoring is required by the EPA to ensure maintenance of the 8-hour ozone standard for the next ten years. Should any changes concerning the location of a monitoring station become necessary, the department's Air Pollution Control Program will work cooperatively with the EPA to ensure the adequacy of the monitoring network is maintained. The department's Air Pollution Control Program will continue to quality assure the monitoring data in order to meet the requirements of 40 CFR 58. The department's Air Pollution Control Program will continue to enter all monitoring data into the EPA's AQS database on a timely basis in accordance with federal guidelines.

5.0 EMISSIONS INVENTORY

5.1 ATTAINMENT AND PROJECTED INVENTORY

An emissions inventory is an itemized list of emission estimates for sources of air pollution in a given area for a specified time period. The two main or most important pollutants that lead to the formation of ground level ozone are VOCs and NOx. The KCMA is currently in attainment for the 8-hour ozone standard. The main objective of the emissions inventory is to support the revisions of the KCMA's Maintenance Plan as required by the CAA Section 110 (a)(1) and the EPA's Phase I Implementation Rule for the 8-hour ozone standard. In addition, this emissions inventory may be used in future regional ozone modeling applications.

The Phase I Implementation Rule provides that the 10-year maintenance period began as the effective date for the initial designation of the area under the 8-hour ozone standard. The effective date for the initial designation of unclassifiable for the KCMA was June 15, 2004. Therefore, emissions for the KCMA must be projected to 2014. States were given the option of choosing one of the three years that the 8-hour attainment designation is based upon (2001, 2002 and 2003). Since the states were required to develop and submit an complete emission inventory for the 2002 National Emissions Inventory (NEI) under the EPA's Consolidated Emissions Reporting Rule (CERR) (40 CFR Part 51), Missouri chose to use 2002 as the attainment emission inventory base year for the Section 110 (a)(1) maintenance plan.

Besides the KCMA, Missouri also has the city of St. Louis and its surrounding counties with a history of ozone air quality issues. Section 182 (a)(3)(B) of the 1990 CAAA requires all states with ozone nonattainment areas to require emissions statements from sources of VOC and NOx. In January 1994, the department submitted a revision to the Missouri SIP that demonstrated compliance with this requirement. Since that time, the annual reporting forms that individual companies use to report their emissions have gone through a number of revisions. The reporting requirements associated with these forms are specified in 10 CSR 10-6.110, Submission of Emission Data, Emission Fees, and Process Information. These reporting forms are known as Emissions Inventory Questionnaires (EIQs).

EIQs provide the mechanism by which the department collects the information required by Section 182 (a)(3)(B) of the CAAA. The information provided by companies includes the name, location, address, geographical location, industrial classification codes, and the operational activity and process rates throughout the year. The forms also require the identification of emissions controls and control efficiencies, as well as emissions factors and emissions calculations methods used. The forms also provide the necessary certification from the sources that the data is accurate.

The department's Air Pollution Control Program prepared an inventory for the 2002 NEI as required by the CERR. However, subsequent to submitting the data to the 2002 NEI, substantial revisions and improvements were made to the point, area, and offroad mobile source emissions through the Central Region Air Planning Association (CENRAP) workgroup process for regional haze planning and analysis. In addition, the department developed updated 2002 onroad mobile emissions estimates for the base year inventory using more current input data, based on the latest MARC vehicle miles traveled (VMT) estimates. The 2002 base year inventory for the KCMA is a composite of inventory data prepared by the department's Air Pollution Control Program and data generated through the CENRAP process.

This inventory is comprehensive and current for all 2002 actual emissions of the pollutants that contribute to ozone formation in the KCMA. The inventory addresses emissions of VOCs, NOx and carbon monoxide (CO) from stationary point and area sources, onroad and offroad mobile sources, and biogenic sources for all five counties of the KCMA. This attainment inventory is based on actual typical ozone season day (OSD) emissions. Ozone season day emissions are defined as emissions occurring during a typical weekday during the high ozone season, which is June through August. Emissions for all categories were calculated for 2002 and 2014 in tons per OSD.

The 2002 KCMA base emissions inventory was a cooperative effort. In addition to the work completed through the CENRAP workgroup process that has been incorporated, MARC, KDHE, and the department's Air Pollution Control Program also made contributions. MARC provided the onroad VMT data for the five county KCMA. The department's Air Pollution Control Program developed all of the emissions estimates for all point, area, offroad and onroad mobile categories based on information provided by MARC and KDHE. KDHE developed the biogenic emissions for the counties in the KCMA.

5.2 ANTHROPOGENIC EMISSIONS

Anthropogenic emissions are emissions resulting from human activities and are broadly classified into the point, area, offroad mobile and onroad mobile source types.

5.2.1 Point Source Emissions

5.2.1.1 Point Source Emission Description

Point sources are large, stationary, identifiable sources of emissions. The department defines point sources as sources with a Basic, Intermediate or Part 70 operating permit that must report their actual emission to the department on an annual basis through the EIQs that are described in the previous section.

The 2002 point source inventory is based on the 2002 EIQs submitted by facilities. The 2002 EIQ data collection process was conducted by the department's Air Pollution Control Program and the local air pollution agencies of St. Louis County and the cities of St. Louis, Springfield and Kansas City. As the coordinating agency for point source inventory development, the department's Air Pollution Control Program performed the overall quality-assurance procedures and submitted the data to the 2002 NEI to meet the requirements of the CERR.

Following submission of the Missouri point source inventory to the 2002 NEI, additional quality assurance and revision of the data was completed through the CENRAP process. Pechan, through a contract with CENRAP, obtained the Missouri point source inventory and worked with the department's Air Pollution Control Program to make corrections where needed. In particular, an error that resulted in the double-counting of emissions from a number of emissions units was corrected. Other revisions included corrections to facility coordinates and stack parameters. Pechan also converted the point source inventory to the Sparse Matrix Operator Kernel Emissions / Inventory Data Analyzer (SMOKE/IDA) format. Pechan's work is described in detail in the two documents *The Consolidation of Emissions Inventories* (April 28, 2005) and *Refinement of CENRAP's 2002 Emissions Inventories* (August 31, 2005). These two documents can be found in Appendix I and Appendix J respectively.

The SMOKE/IDA-formatted file prepared by Pechan was considered to be the most accurate and current version of the 2002 Missouri point source inventory and therefore was used as the basis for the base and projected year inventories summarized in this document. The file contained the annual emissions for all point sources and ozone season day emissions where this information was provided in EIQs. Because ozone season day emissions information was not complete, the SMOKE model was used to calculate typical ozone day emissions for almost all point sources in the KCMA in order to apply consistent procedures to all sources. An explanation of how the typical ozone season day was calculated can be found in Appendix K.

5.2.1.2 Point Source Emissions Projection Year Calculation

The ozone season day emissions data available from EIQs and SMOKE model calculations were used to determine the emissions levels for the future attainment year of 2014. To project the future emissions levels, the EPA's Economic Growth Analysis System (EGAS) v5.0 software was used to determine the growth factors for all emissions sources. EGAS v5.0 allows the user to first set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on Source Classification Code (SCC) and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from all point sources:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

This calculation was done on most of the point sources to project their emissions. There were a small number of point sources that had undergone significant changes since the 2002 emissions inventory. Kansas and Missouri identified those point sources that had either closed, added emissions control devices, or recently opened. Depending on the status of the point source, the emissions from these sources were removed, reduced or added to the inventory for the 2014 projected emissions. The number of sources that had significant changes that required adjustments to their emissions inventory totaled less than ten for the five county KCMA.

The only source category that was calculated differently from the basic growth method was the projected emissions from EGUs. Due to the dramatic changes in the energy sector between 2002 and 2005, it was determined that the 2005 data was more representative for current and future emissions from various EGUs rather than 2002 emissions data. Therefore, 2005 emissions year data was used in place of 2002 emissions source data for EGU emissions

projections in the KCMA. The 2005 point source EGU emissions data was then used to calculate the 2014 projected emissions using the same growth factor calculation listed above. After the 2014 projected emissions were calculated for the EGUs, the future effects of the CAIR restrictions were factored in. CAIR is an EPA rulemaking that affects EGUs in 28 eastern states in the United States, including Missouri. It limits the emissions levels of NOx through a cap and trade program. As previously mentioned, CAIR has two deadlines for emissions reductions in 2009. The first level of emissions reductions can be achieved in a variety of ways. The options include the addition of controls, retiring a unit, reducing the load on a unit or purchase of credits from other sources. In addition, a utility company can over control emissions at one source, and then transfer the excess credits to a second unit that is under controlled, thus balancing out the company's overall emissions. Therefore, for those EGUs in the KCMA affected by CAIR, their emissions levels were limited to the 2009 allocation amount in the 2014 attainment inventory. For additional information on CAIR, please see the Current Control Measures – Federal Control Measures section.

A comparison of the point source emissions for a typical ozone season day in 2002 versus a typical ozone season day in 2014 reflects a large decrease in NOx emissions, and a slight increase in VOC emissions. Appendix L1 lists the typical ozone season day emissions for point sources in the Missouri portion of the KCMA. This data includes the typical summer day emissions for VOCs, NOx and CO by 2-digit Standard Industrial Code (SIC) categories for 2002 and 2014. This table is sorted from highest to lowest VOC emissions. Appendix L2 lists the typical ozone season day emissions for the point sources in the Missouri portion of the KCMA for VOCs, NOx and CO by individual companies for 2002 and 2014. It is sorted from highest to lowest by VOC emissions. Appendix L3 lists the ozone season day emissions from EGUs in the Missouri portion of the KCMA. It is sorted from highest to lowest by NOx emissions. Appendix L4 lists the Kansas portion of the KCMA point source emissions data by 2-digit SIC categories.

5.2.2 Area Source Emissions

5.2.2.1 Area Source Emissions Description

Area sources are stationary sources that do not qualify as point sources under the relevant emissions cutoffs. Area sources encompass more widespread sources that may be abundant but

individually release small amounts of a given pollutant. Examples of area sources include autobody painting, fires, dry cleaners, and consumer solvent use.

The 2002 area source inventory is a consolidation of the best available area source emissions data. It includes emissions estimates prepared by the department's Air Pollution Control Program and CENRAP, with remaining gaps filled in with data from the EPA's NEI. For the categories developed by the department's Air Pollution Control Program, the data and methods used are described in the document *Missouri Stateside Estimates for the 2002 National Emissions Inventory (NEI): Area Sources*. This document can be found in Appendix M. The data and methods used to develop the prescribed burning inventory for CENRAP are discussed in Sonoma Technology's report *Research and Development of Planned Burning Emission Inventories for the Central States Regional Air Planning Association* (July 30, 2004). Sonoma Technology's report is located in Appendix N. Documentation of the EPA's methods for the NEI may be found on the EPA's Clearinghouse for Inventories and Emissions Factors (CHIEF) website at http://www.epa.gov/tnn/chief/net/2002inventory.html.

In a contract with CENRAP, Pechan consolidated the area source data from the various sources, conducted additional quality assurance, and worked with department's Air Pollution Control Program to make revisions where needed. In particular, corrections were made to a double-counting error of industrial surface coating VOC emissions. Pechan also converted the area source inventory to the SMOKE/IDA format. Pechan's work is described in detail in the two documents *The Consolidation of Emissions Inventories* (April 28, 2005) and *Refinement of CENRAP's 2002 Emissions Inventories* (August 31, 2005).

The SMOKE/IDA-formatted file prepared by Pechan was considered to be the most accurate and current version of the 2002 Missouri area source inventory and was used as the basis for the base and projected year inventories summarized in this document. The file contained the annual emissions for all area sources and ozone season day emissions for some categories. Because ozone season day emission information was not complete, the SMOKE model was used to calculate typical ozone day emissions for all area sources in the KCMA in order to apply consistent procedures to all sources.

5.2.2.2 Area Source Projection Year Calculation

The ozone season day emissions data available from the SMOKE model calculations were used to determine the emissions levels for the future attainment year of 2014. To project the future emissions levels, the EPA's EGAS v5.0 software was used to determine the growth factors for all emissions sources. EGAS v5.0 allows the user to set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on SCC and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from all area source categories:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

After area source category emissions were calculated, regulations that were enacted after 2002 were factored into the calculation for some area source emissions. These controls were implemented as a result of previous ozone violations, and result in additional emissions reductions that were not taken into account by the initial inventory. Two regulations that were enacted after 2002 that affect the KCMA are 10 CSR 10-2.215 Control of Emissions from Solvent Cleanup Operations and 10 CSR 10-2.260 Control of Petroleum Liquid Storage, Loading and Transfer. These regulations apply only to the KCMA and only affected a few SCC codes. Some portions of the federal ORVR requirements that have been enacted on a rolling basis have also reduced emissions from some area SCC categories. These adjustments were taken into account by the following equation:

2014 adjusted OSD emissions = 2014 OSD emissions x (1-[(CE)x(RE)x(RP)]/1000000)

where CE is the control efficiency of the rule, RE is the rule effectiveness, and RP is the rule's penetration, all in percentages. Control efficiency represents the amount of a source category's emissions that are controlled by a control device, process change, or reformulation. CE values for area sources represent the weighted average control for the category. Rule effectiveness is an adjustment to the CE to account for failures and uncertainties that affect the actual performance of the control. The EPA recommends a default value of 80 percent for RE, if information cannot be acquired to substantiate the true value of RE. If controls are irreversible process changes or reformulations, RE can be set at 100 percent. Rule penetration is defined as the percentage of the area source category that is covered by the applicable regulation or is expected to be complying with the regulation. The RP value can be based on a percentage of the source category that is covered by a regulation.

A comparison of typical ozone season day area source emissions for the 2002 ozone season versus the 2014 ozone season reflects an increase in VOCs and a slight increase in NOx. Appendix O1 provides a list of the Missouri portion of the KCMA area source emissions by 2-digit SIC code listed in order from largest to smallest VOC sources. Appendix O2 lists the Kansas portion of the KCMA area source emissions.

5.2.3 Onroad Mobile Source Emissions

5.2.3.1 Onroad Mobile Source Emissions Description

Onroad mobile sources include motor vehicles such as cars, vans, trucks, buses, and motorcycles that are used for transportation of passengers and goods on public roads and streets. Internal combustion (IC) engines power nearly all mobile sources other than jet or turboprop aircraft. IC engines can be either spark–ignition engines such as those found in most automobiles, or compression-ignition (diesel) engines such as those found in larger (heavy duty) trucks. Almost all mobile sources use liquid fuels such as gasoline or diesel fuel.

5.2.3.2 Onroad Mobile Source Emissions Calculation

The department's Air Pollution Control Program used the Mobile 6.2 model to estimate onroad vehicle emissions for the 2002 base year inventory and the 2014 projected year inventory for both the Kansas and Missouri portions of the KCMA. Input file information was adjusted to reflect the 7.0 RVP fuel requirement for the KCMA, as well as the maximum, minimum and mean temperature data for the ozone season. Temperature information was obtained from the Weather Channel's website at www.weather.com. For the 2014 projected emissions, the Mobile 6.2 model is designed to take into account any federal control measures that will result in a decrease in emissions. Appendix P1 provides a table of the settings that were changed from the default Mobile 6.2 values. Additional information on what federal control measures may result in emissions reductions can be found in the Current Control Measures – Federal Control Measures section. The Mobile model provides an emissions rate in grams/mile.

The 2002 and 2014 VMT county data for the each of the five counties in the KCMA was obtained from MARC in July of 2006. MARC developed the average daily VMT estimates for each county for both 2002 and 2014 using the EMME/2 regional travel demand model. EMME/2 was validated against 1998 average daily traffic counts and count-derived VMT to determine whether it reasonably reflects vehicular travel patterns. Some factoring of model-

based assignments and/or count data was required because the regional travel demand model estimates are for the year 2000, consistent with MARC's regionally adopted forecasts for population and employment. The validation of the EMME/2 included a review of the network coding and a check of the accuracy of counts used for validation, as best as possible, versus available historical counts. Network estimated traffic speeds generated by EMME/2 were also checked versus recently observed values. Seasonal adjustments were made to the average daily VMT based on summer travel information from the Missouri and Kansas Departments of Transportation. The VMT data for each county in the KCMA can be found in Appendix P2

In order to determine the typical ozone season daily emissions, the Mobile 6.2 emissions rate is converted to tons/mile and multiplied by the VMT for each county. The following equation was used to determine the OSD emissions:

2002 onroad emissions = 2002 emissions rate (g/mi.) x (1 ton/907184.74g) x VMT for county

The individual county emissions were then added together to determine the total emissions for the Missouri portion of the KCMA.

A comparison of the Missouri onroad mobile sources emissions for 2002 versus 2014 show a large decrease in VOC and NOx emissions. These large reductions can be traced to the federal control measures that are being enacted between 2002 and 2014. Appendix P3 provides a table of the onroad emissions for the Missouri portion of the KCMA. The onroad emissions data for the Kansas portion of the KCMA can be found in Appendix P4.

5.2.4 Offroad Mobile Source Emissions

5.2.4.1 Offroad Mobile Source Emissions Description

Offroad mobile sources are mobile and portable I/C powered equipment not generally licensed or certified for highway use. Offroad engines are classified according to distinct offroad equipment categories. These categories range from small lawn and garden equipment to heavy-duty construction equipment, large aircraft and diesel locomotives.

5.2.4.2 Offroad Mobile Source Emissions Calculations

The department's Air Pollution Control Program calculated the majority of the offroad emissions using the EPA's NONROAD2005 Model. This model provides the emissions for all offroad source categories except aircraft, commercial marine vessel, and railroad locomotive.

For the 2002 ozone season day run, most settings were left as default. The maximum, minimum and average summer temperatures were changed, and the gasoline fuel RVP was set to 7.0 psi. For the 2014 projected ozone season day run, these variables were changed, as was the sulfur content for diesel fuel. By 2014, Ultra Low Sulfur Diesel will be required for all offroad use except locomotive and marine. Appendix Q1 provides all of the settings that were changed from the default values for the NONROAD2005 runs.

The emissions calculations for aircraft, commercial marine vessels, and railroad locomotives were calculated from the SMOKE/IDA formatted file prepared by Pechan. The SMOKE model was used to calculate the typical ozone day emissions from these sources for 2002. The 2014 projected emissions were determined by using the EPA's EGAS v5.0 software. EGAS v5.0 allows the user to set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on SCC and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from aircraft, commercial marine vessels, and railroad locomotives:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

These emissions were then incorporated into the offroad emissions tables.

A comparison of the 2002 and 2014 offroad emissions show a large reduction in both VOCs and NOx emissions. These reductions are the result of Federal control measure that have become effective since the base inventory year of 2002. Appendix Q2 provides a table of the offroad emissions from Missouri counties in the KCMA. The offroad emissions for the Kansas KCMA counties' emissions can be found in Appendix Q3.

5.3 BIOGENIC EMISSIONS

5.3.1 Biogenic Emissions Description

Biogenic sources are biological sources of ozone precursor emissions such as trees, agricultural crops, or microbial activity in soils or water. The EPA's *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations* (August 2005) encourages the use of biogenic estimates for the NEI as the basis for SIP and Maintenance Plan inventories. The county-level biogenic emissions estimates summarized in the KCMA base and projected year

inventories were obtained from the 2002 NEI inventory from the EPA's ftp site: ftp://ftp.epa.gov/EmisInventory/2002finalnei/biogenic_sector_data/

5.3.2 Biogenic Emissions Calculations

The EPA prepared the biogenic emissions using the BEIS3.12 model via the SMOKE modeling system. The BEIS3.12 inputs were based on 2001 annual meteorology and the BELD3 land use data. The county-total emissions from SMOKE were estimated based on the "land area" spatial surrogate.

The biogenic emissions data for a typical ozone season day were determined by summing the emissions for the months of June, July and August for each county, and dividing the county's three month total by 92 days. The result is the biogenic emissions for a typical ozone season day. It was assumed that the biogenic emissions for 2002 and 2014 would be similar. Appendix R1 and R2 respectively provide tables for the biogenic emissions of the Missouri and Kansas portions of the KCMA.

5.4 MAINTENANCE DEMONSTRATION

The 2002 total anthropogenic emissions for the total KCMA are 226.42 tons/OSD of VOCs and 316.09 tons/OSD of NOx. The projected 2014 anthropogenic emissions for the KCMA are 181.07 tons/OSD of VOCs and 180.08 tons/OSD of NOx. Appendix S provides tables by source type for the anthropogenic emissions of the Missouri portion of the KCMA, the Kansas portion of the KCMA and the combined total anthropogenic emissions for the entire KCMA. Currently the KCMA is in attainment for the 8-hour ozone standard. Based on the emissions reductions of ozone precursors as a result of upcoming federal rulemakings already in place, the projections of this maintenance plan demonstrate that the area will remain in attainment for the 8-hour standard over the required 10-year time period. It is important to note that the formation of ozone is dependent on a number of variables that cannot be estimated by emission growth and reduction calculations. These variables include weather and the transport of ozone forming compounds from outside of the maintenance area.

5.5 VERIFICATION OF CONTINUED ATTAINMENT

Recognizing the importance of maintaining current, valid emissions information, the department's Air Pollution Control Program agrees to update the emissions inventory for the KCMA Ozone Maintenance Area approximately every three years. The years of 2005, 2008 and 2011 were chosen as interim years. This emissions inventory update will include point, area, onroad and offroad emissions. Information from these future updates of the emissions inventories will be compared with projected growth estimations of the 2002 base inventory data to assure that the standard is maintained. The grown emissions estimates for the 2005, 2008 and 2011 interim years are included in Appendix T.

6.0 CONTINGENCY PLANNING

6.1 PURPOSE OF CONTINGENCY PLANNING

Section 110(a)(1) of the CAA requires the state to develop a contingency plan that, at minimum, will ensure that any violation of the 8-hour ozone standard is promptly corrected. Contingency measures may also be implemented in response to increases in VOC or NOx emissions that threaten to exceed the standard. The purpose of these controls in an attainment area is to achieve sufficient VOC and/or NOx emission reductions to eliminate further ozone violations. Implementing controls in response to ozone violations in attainment areas can occur without federal redesignation of the area to nonattainment.

The department's Air Pollution Control Program collected information based on discussions and information gathered from industry, metropolitan planning organizations, the EPA and other states regarding the magnitude of VOC and NOx emissions reductions from various emission control strategies. The effectiveness and viability of possible control measures were compared. Some control measures interact with other potential control measures, thereby decreasing the overall effectiveness of the emission reductions. Estimates of the emission reductions expected from implementation of mobile source measures have been obtained from MOBILE 6.2 model estimates where applicable. The major considerations that went into choosing contingency control measures were:

- cost effectiveness
- easily realized reductions with minimal lead in time

- overall benefit of controls

To assure that the area remains in attainment with respect to the 8-hour standard, additional control measures may need to be implemented in response to future violations of the 8-hour standard. The purpose of the contingency measure section in this maintenance plan is to establish a formal process that the department's Air Pollution Control Program would use to implement control measures in the event of a future violation of the 8-hour ozone standard.

6.2 CONTINGENCY MEASURES

When selecting control measures to implement in the event of a violation of the 8-hour ozone standard, it is important to consider the implementation time frame. A contingency plan needs to contain control measures that can be implemented in a relatively short time frame and demonstrate results quickly. Other control measures that may have a longer implementation time frame should also be considered for use based on their level of reductions.

The ability of the KCMA to continue meeting the 8-hour ozone standard is dependent on both local meteorological conditions and the levels of VOC and NOx emissions in the area. As required by Section 110(a)(1) of the CAA, the department's Air Pollution Control Program has developed the following triggers and contingency control measures. The contingency control measures are designed as a two phased approach, with implementation occurring when the trigger of a specific phase occurs.

Phase I would be implemented as the result of a violation of the 8-hour ozone standard. As previously discussed, a violation of the 8-hour ozone standard occurs when the area's design value exceeds 0.085 ppm. The design value for the area is determined by the average of the three-year consecutive years of fourth highest values calculated at each monitor. The monitor in the area that has the highest three-year fourth highest average value is the area's design value.

The violation of the 8-hour standard, once quality assured, would trigger the following Phase I control measures to be implemented in the Missouri portion of the KCMA:

- Early implementation of control devices on CAIR affected coal fired EGUs
- Idle reduction regulation

CAIR affected sources in the KCMA are expected to decrease their emissions substantially as a result of the first stage of CAIR. Under CAIR the state of Missouri developed budget allocations

for each EGU affected by the regulation. Based on the budgeted allocations in 10 CSR 10-6.364 Clean Air Interstate Rule Seasonal NOx Trading, Table 1 compared to the 2005 reported NOx emissions from the affected EGUs in the KCMA, these reductions will reduce EGU NOx emissions in the Missouri portion of the KCMA by approximately 25% from the reported 2005 NOx emissions.

In addition to the Phase I control measures, it is anticipated that the voluntary measures included in the CAAP will continue to be implemented. It is also expected that in the event of a violation of the 8-hour ozone standard, the department's Air Pollution Control Program would submit a request to the Governor of Missouri to exempt the KCMA from the statewide ten percent ethanol mandate. The EPA's desired timeline for adoption and implementation of control measures is as expeditious as practicable, but no longer than 24 months. It is anticipated that all of these control measures can meet the desired timeframe.

Phase II of the contingency plan would be triggered by the occurrence of either of the following two events. The first trigger would be the three-year design value for the area equaling or exceeding 0.089 ppm. This triggering event would become active one year following the end of the ozone season that triggered the Phase I contingency measure. The second triggering event would be three consecutive years following the Phase I trigger year with a design value greater than 0.084 ppm. Either of these events would implement the selection of control measures of Phase II. Following the implementation of Phase I, if any one year has a three-year design value equaling or exceeding 0.085 ppm, an evaluation to determine appropriate action will be undertaken by the department's Air Pollution Control Program.

The purpose of delaying the potential to implement Phase II control measures for a period of time following the implementation of Phase I is to allow for Phase I controls to be implemented and have an effect on air quality in the region before Phase II is implemented. It also allows for further evaluation of the various control measures that could be implemented under Phase II. Unlike Phase I where all control measures proposed will be implemented, further study of Phase II controls will result in the implementation of those that provide the greatest cost effectiveness and greatest benefits to the air quality of the KCMA to be implemented. Control options being considered for the Missouri portion of the KCMA for Phase II include:

- NOx reductions to coal fired EGUs not covered under CAIR that exceed 100 tons of NOx emissions per year
- NOx reductions to industrial boilers and process heaters that exceed 100 tons of NOx emissions per year,
- NOx reductions to cement kilns that exceed 100 tons of NOx emissions per year
- Lowering the threshold for major sources of VOCs to 75 tons per year
- Enacting regulations to reduce VOC emissions from 46 Architectural and Industrial Maintenance Coatings, including traffic coatings
- Enacting emissions offsets of 1.1:1.0 for new sources
- Diesel Engine Chip Re-flashing regulation
- Enacting a gas cap testing program
- Eliminating the 1.0 psi waiver for fuel containing ethanol during the ozone season

As previously mentioned, control measures will be selected from the above list based on emission reduction benefits, cost effectiveness and timeframe of implementation. In order to aid in determining the most beneficial control measures, photochemical modeling will be used as a tool for evaluation. The state of Missouri also reserves the right to consider additional potential contingency control measures if other beneficial emission reduction methods are determined to be useful to the air quality in the KCMA in the future. Adoption and implementation of controls shall take place no later than 18-24 months after the department's Air Pollution Control Program makes a determination, based on quality-assured ambient data, that a trigger established by this plan has been exceeded.

Adoption of additional control measures is subject to necessary administrative and legal processes. The department's Air Pollution Control Program will solicit input from interested parties and affected persons in the KCMA prior to selecting appropriate contingency measures. No contingency measures will be implemented without providing the opportunity for full public participation. This process will include publication of notices, an opportunity for public hearing, and other measures required by the department's Air Pollution Control Program regulations.

7.0 CONFORMITY

7.1 Purpose of Conformity

Conformity analysis is a demonstration that the regional emissions from proposed transportation projects would not exceed the motor vehicle emissions budgets. If the conformity requirements cannot be met, then only certain types of project may proceed until the requirements can be met. The emissions inventory provides a basis for establishing new motor vehicle budgets, which are used to demonstrate consistency between the region's air quality goals and emissions expected from implementation of transportation plans and programs.

7.2 Conformity Requirement

The KCMA was required to perform transportation conformity after violating the one-hour standard. The CAA, Section 176(c) and regulations under 40 CFR part 51 subpart W, continued this requirement for areas that were designated as maintenance areas for any criteria pollutant or standard for which there is a NAAQS. Therefore, the EPA determined that once the one-hour ozone standard was revoked, areas that were designated attainment under the 8-hour standard would no longer be required to perform transportation conformity. The KCMA meets this determination. Therefore, conformity has not been required in the KCMA since 2004.

8.0 REFERENCE INFORMATION

8.1 LIST OF REFERENCES

1 CENRAP Emissions Inventory 2002, www.cenrap.org

2 Economic Growth Analysis System (EGAS) v4.0, U.S. Environmental Protection Agency, http://www.epa.gov/ttn/chief/emch/projection/index.html.

3 EPA NEI BEIS3.12 by County and Month ftp://ftp.epa.gov/EmisInventory/2002finalnei/biogenic_sector_data/

4 I-Steps Point Source Database, Kansas Department of Health and Environment; Bureau of Air and Radiation, Topeka, KS, 2002

5 Missouri Emissions Inventory System (MoEIS), Missouri Department of Natural Resources, Air Pollution Control Program, Jefferson City, MO, 2002

8.2 LIST OF ACRONYMS AND ABBREVIATIONS

AQF	Air Quality Forum
AQS	Air Quality System
AQWG	Air Quality Working Group
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAP	Clean Air Action Plan
CAIR	Clean Air Interstate Rule
CE	control efficiency
CENRAP	Central Regional Air Planning Association
CERR	Consolidated Emissions Reporting Rule
CFR	Code of Federal Regulations
CHIEF	Clearinghouse for Inventories and Emissions Factors
CO	carbon monoxide
EGAS	Economic Growth Analysis System
EGU	electric generating unit
EIQ	Emissions Inventory Questionnaires
EPA	United States Environmental Protection Agency
FHA	Federal Highway Administration
I/M	vehicle inspection and maintenance program
IC	internal combustion
IDA	Inventory Data Analyzer
KCI	Kansas City International Airport
KCMA	Kansas City Maintenance Area
KDHE	Kansas Department of Health and the Environment
LRTP	Long Range Transportation Plan
MACC	Missouri Air Conservation Commission
MARC	Mid America Regional Council
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standard
NEI	National Emissions Inventory
NOx	nitrogen oxides
ORVR	Onboard Refueling Vapor Recovery
OSD	ozone season day
Pechan	E.H. Pechan & Associates, Inc.
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
RE	rule effectiveness
RFG	reformulated gasoline
RP	rule penetration
RVP	Reid vapor pressure
SCC	Source Classification Code
SIC	Standard Industrial Code
SIP	state implementation plan

SMOKE	Sparse Matrix Operator Kernel Emissions
TCM	transportation control measures
tpd	tons per day
ULSD	Ultra Low Sulfur Diesel
VMT	vehicle miles traveled
VOC	volatile organic compounds

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